300 **COMPOSITIONS**
301 .Reactive furnace lining
302 .Welding rod or electrode defined by composition
303 .Solid treating composition for liquid metal (e.g., flux, slagging agent, casting agent, etc.) or charge
304 ..In wire, container, or article with surface feature
305 ..For casting or teeming operation
306 ..For electrothermic operation (e.g., electroslag remelting, etc.)
307 ..Containing Boron(B) compound
308 ..Containing Halide
309 ...Containing Fluoride
310 ....And consolidated
311 ...And consolidated
312 ..Containing Carbide
313 ..Composition for or from consolidating by agglomerating, calcinating, compacting, indurating, roasting, sintering, or solidifying from molten mass
314 ...Containing free metal
315 ....Aluminum(Al) or Magnesium(Mg) as free metal
316 ....Iron(Fe), Iron scrap, or Iron alloy as free metal
317 .....And coal, coke, pitch, asphalt, or tar
318 .....And clay (e.g., bentonite, montmorillonite, etc.), cement, or Alkali metal silicate
319 ...Containing Iron(Fe) compound
320 ....And coal, coke, pitch, asphalt, or tar
321 ....And synthetic polymer, natural polymer, or carbohydrate
322 ....And clay (e.g., bentonite, montmorillonite, etc.), cement, or Alkali metal silicate
323 ....And Alkaline earth metal compound or Aluminum(Al) compound
324 ...Containing Zinc(Zn) compound
325 ...Containing coal, coke, pitch, asphalt, or tar
326 ...Containing clay (e.g., bentonite, montmorillonite, etc.), cement, or Alkali metal silicate
327 ...Containing Alkaline earth metal compound or Aluminum(Al) compound
328 ..Containing free metal
329 ..Containing Alkaline earth metal compound or Aluminum(Al) compound
228 .Consolidated metal powder compositions
229 ..Flake or fibrous constituent or fibrous grain structure
230 ..With nonmetal constituent - Silicon(Si) considered a metal (e.g., cermet, etc.)
231 ...Molybdenum sulfide or functional constituent (e.g., lubricant, abrasive, etc.)
232 ...Oxide containing
233 ....With another nonmetal
234 ....Oxygen(O) associated with more than one metal
235 ....Oxide of Aluminum(Al), Beryllium(Be), Magnesium(Mg), Alkaline earth metal, Scandium(Sc), Yttrium(Y), Lanthanide metal, Actinide metal, Titanium (Ti), Zirconium(Zr), or Hafnium(Hf)
236 ...Carbide containing
237 ....With another nonmetal
238 .....Nonmetal is Boron(B) or Nitrogen(N)
239 ....Carbide only of Vanadium(V), Niobium(Nb) or Columbium(Cb), or Tantalum(Ta)
240 ....Carbide only of Chromium(Cr), Molybdenum(Mo), or Tungsten(W)
241 ....Carbon(C) associated with more than one metal
242 .....Free metal is Iron(Fe), Cobalt(Co), or Nickel(Ni) only
243 ...Nonmetal is elemental Carbon(C) only
244 ...Containing Boron(B) or Nitrogen(N)
245 ..Base metal one or more Transition metal
246 ...Base metal one or more of Iron group, Copper(Cu), or Noble metal

247 ....Base metal one or more of Copper(Cu) or Noble metal
248 ...Base metal confined to Tungsten(W)
249 ..Base metal one or more of Beryllium(Be), Magnesium(Mg), or Aluminum(Al)
250 ...Base metal is Beryllium(Be) only
255 .Loose particulate mixture (i.e., composition) containing metal particles
252 ..Mixture contains particles of nonmetal
253 ...Halogen containing particles
254 ...Boron(B) containing particles
330 **PROCESSES**
331 .Producing solid particulate free metal directly from liquid metal (e.g., liquid comminuting, etc.)
332 ..With subsequent coating of the particles
333 ..Utilizing centrifugal force or rotating forming zone to comminute liquid metal
334 ...Including directing liquid metal onto rotating disc
335 ..By vibrating or agitating
336 ..Utilizing electrothermic energy to comminute
337 ..By impinging plural liquid streams
338 ..By impinging or atomizing with gaseous jet or blast
339 ...Gas used is air
340 ..By extrusion spraying or gravity fall through orifice
341 ...Into moving fluid
342 .Spheroidizing or rounding of existing solid metal particles
343 .Producing or purifying free metal powder or producing or purifying alloys in powder form (i.e., named or of size up to 1,000 microns in its largest dimension)
344 ..Radioactive
345 ..Utilizing electrothermic, magnetic, or wave energy
346 ...Utilizing plasma
347 ...Utilizing magnetism
348 ..Producing or purifying named magnetic material
349 ...Using Phosphorus(P), Boron(B), or Silicon(Si) or compound thereof
350 ...Using Alkaline earth metal or compound thereof
351 ..Producing alloy
352 ...Including comminution
353 ..Utilizing scrap material
354 ..Including comminution
355 ...Directly from liquid mass (e.g., by atomizing, etc.)
356 ...And shaping or sintering prior to comminution
357 ...With step at 300 degrees C or greater
358 ....Use of salt bath
359 ....Reduction
360 ....Use of gas
361 ...Using nonmetallic material which is liquid under standard conditions
362 ..Decomposition of organo-compound containing metal or metal carbonyl
363 ..At 300 degrees C or greater
364 ...Combined with step at less than 300 degrees C using nonmetallic material which is liquid under standard conditions
365 ....Step at 300 degrees C or greater after step at less than 300 degrees C using nonmetallic material which is liquid under standard conditions
366 ...Utilizing a fluidized bed
367 ...Vaporizing or condensing free metal
368 ...Settling of powder in molten metal or salt bath
369 ...Purifying powdered metal or reducing powdered metal compound to free metal
370 ..Using nonmetallic material which is liquid under standard conditions
371 ...And settling of free metal from solution
372 ....Displacing by another metal (i.e., electromotive series)
373 ....Copper(Cu) recovered
374 ....Nickel(Ni) or Cobalt(Co) recovered

10.1 .Electrothermic processes (e.g., microwave, induction, resistance, electric arc, plasma, etc.)
10.11 ..With zone melting or fractional crystallization
10.12 ..Controlling process through sensed condition
10.13 ..Electromagnetic wave energy (e.g., microwave, laser, etc.)
10.14 ..Electrical induction
10.15 ...Producing or treating Iron(Fe) or Iron alloy
10.16 ....With induced magnetic stirring
10.17 ....With gaseous treating agent
10.18 ...Producing or treating Aluminum(Al), Beryllium(Be), Cobalt(Co), Chromium(Cr), Magnesium(Mg), Nickel(Ni), Titanium(Ti), or alloy thereof
10.19 ..Plasma
10.2 ...Influenced by magnetic field
10.21 ...Producing or treating Aluminum(Al) or Aluminum alloy
10.22 ...Producing or treating Iron(Fe) or Iron alloy
10.23 ..Consumable metal-containing electrode
10.24 ...Electroslag remelting
10.25 ....Producing or treating Chromium(Cr), Cobalt(Co), Copper(Cu), Iron(Fe), Manganese(Mn), Nickel(Ni), Titanium(Ti), or alloy thereof
10.26 ...Producing or treating Titanium(Ti) or Zirconium(Zr) or alloy thereof
10.27 ..Carbothermic reduction of Aluminum(Al) compound
10.28 ..With volatilization of metal halide
10.29 ..Distillation or volatilization of refined metal or compound thereof
10.3 ...Producing Zinc(Zn)
10.31 ....From consolidated material (e.g., briquette, pellet, etc.)
10.32 ....With electric arc
10.33 ...Producing magnesium(Mg)
10.34 ..Rotating chamber
10.35 ..Reducing or smelting slag or dross as starting material
10.36 ..Exhaust or top gas reused or treated
10.37 ...With production of electrical energy
10.38 ...Producing or treating Iron(Fe) or Iron alloy
10.39 ..Adding gaseous treating agent
10.4 ...Gas contains gaseous Oxygen
10.41 ....Producing or treating Iron(Fe) or Iron alloy
10.42 .....With charge melting by electrothermal energy
10.43 ...Hydrogen or Water vapor
10.44 ...Carbon monoxide or Carbon dioxide
10.45 ...Noble gas, Nitrogen, or inert gas not otherwise identified
10.46 ..Adding solid treating agent, slag or flux
10.47 ...Magnesium(Mg) or compound thereof
10.48 ...Aluminum(Al) or compound thereof
10.49 ...Boron(B) or compound thereof
10.5 ...Silicon(Si) or compound thereof
10.51 ....Ferrosilicon alloy
10.52 ....Silicon carbide
10.53 ....With lime present
10.54 ...Alkali metal, Alkaline earth metal, or compound thereof
10.55 ....Calcium fluoride (e.g., Fluorspar, Fluorite, etc.)
10.56 ....Calcium carbide
10.57 ....Calcium carbonate (e.g., limestone, etc.)
10.58 ....Calcium oxide (e.g., lime, calx, etc.)
10.59 ...Carbon(C) containing material (e.g., Carbon, carbonaceous material, Carbide, etc.)
10.6 ....Producing or treating Iron(Fe) or Iron alloy
10.61 .....With electric arc
10.62 ..Reducing or smelting
10.63 ...Producing or treating Iron(Fe) or Iron alloy
10.64 ..Vacuum purifying or degassing
10.65 ..Melting or holding melt
10.66 ...Producing or treating Iron(Fe) or Iron alloy
10.67 .Magnetic (e.g., electromagnetic, etc.) or electrostatic processes

375 .Process control responsive to sensed condition
376 ..Removing material from process to sense condition
377 ...Material removed is molten metal
378 ..Pressure sensed
379 ...Of feed gas
380 ..Temperature sensed
381 ...Of waste gas
382 ...Of molten metal
383 ...Of sintered material
384 ..Composition sensed
385 ...Of waste gas
386 ..Characteristic of treated material sensed (e.g., density, etc.)
387 ..Flow rate sensed
388 .Preparing for amalgamation, preparing and amalgamating, or breaking amalgam to produce free metal
389 ..And displacing with a metal other than Mercury(Hg)
390 ..Utilizing a Halogen containing agent
391 ..Utilizing a Nitrogen(N) containing agent
392 .Producing or treating free metal
393 ..Utilizing Radioactive material, producing or treating Radioactive metal
394 ...Thorium(Th)
395 ....Reduction
396 ...Plutonium(Pu)
397 ....Reduction
398 ...Uranium(U)
399 ....Reduction
400 ..Free metal production from sea nodules
401 ..Treating multicomponent metal-containing scrap having an integral substrate to separate metal therefrom by temperature modification or chemical process at least one metal remains solid during separation
402 ...Utilizing molten salt bath
403 ...Removing nonmetal from metal
404 ..Separating liquid metal by centrifuging
405 ..Removing gas from liquid metal by use of gas permeable membrane
406 ..Adsorbing impurity from vaporous or liquid metal
407 ..Filtering vaporous or liquid metal
408 ...Alkali metal, singly or in combination
409 ...Magnesium(Mg)
410 ...Noble metal, singly or in combination
411 ...Copper(Cu)
412 ...Aluminum(Al)
413 ..From metal carbonyl or Carbon monoxide complex
414 ..At 300 degrees C or greater (e.g., pyrometallurgy, etc.)
415 ...Foam
416 ...Combined with step at less than 300 degrees C using nonmetallic material which is liquid under standard conditions (e.g., hydrometallurgy, etc.)
417 ....Obtaining metal from photographic waste
418 ....Obtaining metal from electrolytic slime
419 ....Step at less than 300 degrees C using nonmetallic material which is liquid under standard conditions after a step at 300 degrees C or greater
420 .....Step at less than 300 degrees C using nonmetallic material which is liquid under standard conditions is reduction to free metal
421 ......Noble metal
422 ....Silver(Ag)
423 ....Gold(Au)
424 ......Copper(Cu)
425 ......Iron(Fe), Cobalt(Co), or Nickel(Ni)
426 ....Noble metal obtained
427 .....Silver(Ag)
428 .....Gold(Au)
429 ....Copper(Cu) obtained
430 ....Iron(Fe), Cobalt(Co), or Nickel(Ni) obtained
431 ....Zinc(Zn), Cadmium(Cd), or Mercury(Hg) obtained
432 ....Tin(Sn) or Lead(Pb) obtained
433 ...Iron(Fe)
434 ....With concurrent production of hydraulic cement

435 ....With concurrent production of Titanium dioxide
436 ....With consolidation (e.g., pelletizing, etc.) of solid metallic Iron(Fe) product after reduction
437 ....Reducing Iron(Fe) halide
438 ....Making wrought Iron(Fe)
439 .....Pouring molten Iron(Fe) into molten slag (i.e., Aston process)
440 .....Utilizing moving hearth
441 .....Directly from Iron(Fe) compound only (no metallic Iron)
442 ......In moving furnace
443 ....Reducing in gaseous suspension
444 .....Fluidized bed
445 ......With melting of Iron(Fe)
446 ....Outside the fluidized bed
447 ......With solid in fluidized bed in addition to reducible Iron(Fe) compound
448 ....Carbon(C)
449 ....Generated in situ
450 ......Using plural fluidized bed furnaces
451 ......Using plural fluidized bed zones within a furnace
452 .....Solid product produced (without melting)
453 .....Cyclone apparatus used
454 .....Using same inlet to feed solid and gas
455 ......Inlet is a burner
456 ....Burner is horizontal
457 ......Inlet feeds upwardly
458 ....Blast furnace reduction to produce molten Iron(Fe)
459 .....Using additive to the blast
460 ......Carbonaceous
461 ....Slurry of solid in liquid
462 ....Liquid
463 ....Gaseous
464 ....Recycled off gas
465 ......Water
466 ......Oxygen enrichment
467 .....Tapping molten product
468 .....Top gas recovery
469 .....Specified method of charging burden
470 .....Defined composition of slag
471 .....Defined composition of reductant
472 .....Defined composition of Iron(Fe) source
473 ....Reduction in closed retort (e.g., Hoganas process, etc.)
474 ....Reduction in rotary kiln
475 .....With melting of Iron(Fe) product
476 ......Iron(Fe) product melted within rotary kiln
477 .....Introducing solid reductant into rotary kiln
478 ......Solid reductant is recycled
479 ......Any part of the charge is consolidated by agglomerating, compacting, indurating, or sintering (e.g., pelletized ore, flux, or reductant, etc.)
480 ......Reducible Iron(Fe) compound and solid reductant fed through same end of rotary kiln
481 ....Mixed prior to charging
482 .....With generation of gaseous reductant outside rotary kiln
483 ....Superposed multiple hearth reduction
484 ....Moving furnace or hearth (e.g., moving belt, etc.)
485 .....Reduction in molten state
486 ....Heating reduction zone by heat conducted through walls of zone
487 .....Shaft furnace
488 ....Reduction to metallic Iron(Fe) within shaft furnace
489 .....Externally supplied gas reductant
490 ......Solid Iron(Fe) produced within shaft furnace
491 ....With melting Iron(Fe) product outside shaft furnace
492 ....With gasification of solid carbonaceous material in melt (e.g., coal, etc.)
493 ....Using solid Carbon(C) to generate gas in separate furnace (e.g., Wiberg process, etc.)
494 ....Solid Carbon(C) is coal
495 ....Direct addition of gas containing gaseous Oxygen or water to shaft furnace (e.g., continuous HyL process, etc.)

496 .....With reformation of reducing gas in separate furnace (e.g., Midrex process, etc.)
497 .....With plural reformers (e.g., Purofer process, etc.)
498 .....With addition of steam to reformer (e.g., Armco process, etc.)
499 .....Molten Iron(Fe) produced in shaft furnace
500 ....Reduction in molten state
501 .....Gas injection below surface of melt
502 .....Gas injection over surface of melt (e.g., as in reverberatory furnace, etc.)
503 ....Reduction in presence of solid Carbon(C) containing material (e.g., coke, coal, carbides, etc.)
504 .....Including consolidation of solid Carbon(C) containing material with reducible Iron(Fe) compound
505 ....Reduction with externally applied gas (e.g., batch HyL process, etc.)
506 ....Reduction in the presence of liquid carbonaceous reductant (e.g., petroleum, pitch, etc.)
507 ....Melting Iron(Fe) or treating molten Iron
508 .....Vacuum treatment of molten Iron(Fe)
509 ......Free falling stream or spray of molten Iron(Fe)
510 ......Vacuum lift
511 .....With addition of gas
512 ......With addition of gas
513 .....In reverberatory furnace (e.g., open-hearth, Siemens-Martin, puddling, etc.)
514 ......With treating of molten Iron(Fe) with gas outside reverberatory furnace (e.g., in Bessemer converter, etc.)
515 ......With melting Iron(Fe) in shaft furnace
516 ......Using gaseous Oxygen in a higher concentration than in ambient air
517 ......With addition of solid elemental Carbon(C) or employing elemental Carbon furnace lining
518 ......With compound containing Alkali metal and Oxygen (e.g., Sodium nitrate, Sodium carbonate, etc.)
519 ......With Halogen or Halogen containing compound (e.g., Sodium chloride, Fluorspar, etc.)
520 ......With Alkaline earth metal or Magnesium(Mg) containing compound
521 ......With Transition metal compound
522 .....Iron oxide
523 ......Melting solid Iron(Fe)
524 .....Sequential treatment of molten Iron(Fe) in plural apparatus with different linings (e.g., acid Bessemer followed by basic Bessemer, etc.)
525 .....Impinging free falling molten metal stream or spray with a gas or solid agent or spraying (e.g., atomizing, etc.) of molten metal
526 .....Adding solid treating agent in form of wire, rod, or article with surface feature or in container or by plunging means
527 .....In rotary kiln (e.g., Kaldo process, etc.)
528 .....Injecting gas or nonmetalliferous liquid which gasifies into, onto, or through premelted Iron(Fe) or slag layer thereon
529 ......With hydrocarbon liquid or gas present
530 .....And hydrocarbon in surrounding relationship to gaseous Oxygen (e.g., hydrocarbon in outer concentric tube, etc.)
531 ......And adding solid agent, slag, or flux to premelted Iron(Fe) or slag layer thereon
532 .....Loose elemental Carbon(C), coal, or coke (e.g., carburizing, etc.)

533 ....With solid entrained in gas or injected by gas pressure
534 ....Boron(B) or compound thereof used in process
535 ....Metal halide used in process
536 ....Carbide used in process
537 ....Elemental metal or elemental Silicon(Si) used in process
538 ....Iron(Fe) containing compound used in process
539 ....Alkali metal compound or Alkaline earth metal compound used in process
540 ....Gas contains gaseous Oxygen
541 ....Metal halide
542 ....Carbide
543 ....Elemental metal or elemental Silicon(Si)
544 ....Iron(Fe) containing compound
545 ....Alkali metal compound or Alkaline earth metal compound
546 ....Noble gas or inert gas not otherwise identified
547 ....Gas compound containing Oxygen (e.g., Carbon monoxide, Carbon dioxide, Water, etc.)
548 ......Gas contains gaseous Oxygen
549 ....With treatment of exhaust gas
550 ....And adding gaseous Oxygen or inert gas to exhaust gas
551 ....Injecting from above and below melt surface
552 ....Including other gas from below
553 ....Injecting only from above melt surface
554 ....Including other gas from above
555 ....Including other gas from below
556 ....Injecting only from below melt surface
557 ....Including other gas from below
558 ......Noble gas or inert gas not otherwise identified
559 ......Gas compound containing Oxygen (e.g., Carbon monoxide, Carbon dioxide, Water, etc.)
560 .....Treating premelted Iron(Fe) or slag layer thereon by adding solid agent, slag, or flux
561 ......Loose elemental Carbon(C), coal, or coke (e.g., carburizing, etc.)
562 ......Sulfur(S) or compound thereof
563 ......Nitrate, Chlorate, Permanganate, or Peroxide
564 ......Boron(B) or compound thereof
565 ......Metal halide
566 ......Carbide
567 ......Elemental metal or elemental Silicon(Si)
568 ....Aluminum(Al) or Magnesium(Mg)
569 ......Iron(Fe) containing compound
570 ......Alkali metal compound or Alkaline earth metal compound
571 .....Melting solid Iron(Fe)
572 ......Melting packaged Iron(Fe) or Iron of specified structure to facilitate melting (e.g., shaped bale of scrap, etc.)
573 ......In shaft furnace (e.g., cupola, etc.)
574 ....Without the use of solid, carbonaceous material (e.g., without coke, etc.)
575 ....Using Oxygen in a higher concentration than ambient air
576 ....Using both a solid carbonaceous fuel (e.g., coke, etc.) and a fluid (e.g, natural gas, etc.)
577 ....Defined composition of solid fuel other than nominal "coke"
578 ....With Calcium carbide
579 ....With Alkali metal compound
580 ......In closed vessel with heat conducted through walls only (e.g., crucible melting, etc.)
581 ......Melting scrap
582 .....Separating slag from molten Iron(Fe)
583 .....Stirring or agitating molten Iron(Fe)
584 .....Pouring or tapping molten Iron(Fe)
585 ...Nonferrous

586 ....Concurrent production of Nonferrous metal and other desired nonmetallic product (e.g., cement, etc.)
587 ....Countercurrent liquid-liquid extraction of molten Nonferrous metal
588 ....Fractionation of molten Nonferrous metal (e.g., with reflux, etc.)
589 ....Alkali metal, singly or in combination
590 .....Vaporizing or condensing
591 ......Cesium(Cs)
592 .....Precipitating impurities from molten Alkali metal
593 ....Beryllium(Be)
594 ....Magnesium(Mg)
595 .....Vaporizing or condensing
596 ......Reduction
597 ....Using metal or metal compound reductant
598 ....And Carbon(C)
599 ....Using Carbon(C)
600 .....Treating molten Magnesium(Mg)
601 ......Precipitating impurities from molten Magnesium(Mg)
602 ......Adding gas
603 ....And solid
604 ......Adding solid
605 ....Alkaline earth metal, singly or in combination
606 .....Reducing halide
607 .....Vaporizing or condensing
608 ......Reduction
609 .....Treating molten Alkaline earth metal
610 ....Rare earth metal, singly or in combination
611 ....Refractory metal, singly or in combination
612 .....Titanium(Ti), Zirconium(Zr), or Hafnium(Hf), singly or in combination
613 ......Reduction
614 ....Using free metal or alloy reductant
615 ....Of Titanium(Ti), Zirconium(Zr), or Hafnium(Hf), compound containing Halogen
616 ....Of binary halide - MX(4)
617 ....Of chloride - MC1(4)
618 ....Free metal or alloy reductant contains Magnesium(Mg)
619 ....Metal produced is Titanium(Ti)
620 ....Of Titanium(Ti), Zirconium(Zr), or Hafnium(Hf) compound containing Halogen
621 ......Treating molten Titanium(Ti), Zirconium(Zr), or Hafnium(Hf)
622 .....Vanadium(V), Niobium(Nb) or Columbium(Cb), or Tantalum(Ta), singly or in combination
623 .....Chromium(Cr), Molybdenum(Mo), or Tungsten(W), singly or in combination
624 ....Manganese(Mn)
625 .....Reduction
626 ....Cobalt(Co)
627 .....Reduction
628 ....Nickel(Ni)
629 .....Reduction
630 ......Segregation process
631 ....Noble metal, singly or in combination
632 .....Palladium(Pd)
633 .....Platinum(Pt)
634 .....Silver(Ag)
635 ......Recovering Silver(Ag) from photographic material
636 ......Reduction
637 .....Gold(Au)
638 ....Copper(Cu)
639 .....Treating material in gaseous suspension
640 .....Treating slag or dross
641 .....Reduction
642 ......Segregation process
643 ......Treating matte or sulfide
644 ....Treating waste gas
645 ....With prior production of matte or sulfide
646 .....Treating molten Copper(Cu)
647 ......By vacuum
648 ......Adding gas
649 ....Containing gaseous Oxygen
650 ....And adding solid
651 ....And solid
652 ......Adding solid
653 .....Melting Copper(Cu) in shaft furnace
654 ....Zinc(Zn)

655 .....Treating slag or dross
656 .....Reduction
657 .....Using Halogen containing material
658 .....Vaporizing or condensing
659 .....Treating material in gaseous suspension
660 .....Treating material in blast furnace or cupola
661 .....Treating material in vertical retort
662 .....Treating material in rotary kiln
663 .....Treating molten or vaporous Zinc(Zn)
664 .....Using Halogen containing material
665 .....Vaporizing or condensing
666 .....Condensing with Lead(Pb) coolant
667 .....Condensing with use of molten metal slinger
668 ....Cadmium(Cd)
669 .....Vaporizing or condensing
670 ....Mercury(Hg)
671 ....Aluminum(Al)
672 .....Treating slag or dross
673 .....Reduction
674 .....Carbothermic
675 .....Decomposition of organo-compound containing Aluminum(Al)
676 .....Of Aluminum(Al) halide
677 .....Of subhalide
678 .....Treating molten Aluminum(Al)
679 .....Fractional crystallization
680 .....Adding gas
681 .....Containing Halogen atom
682 .....And adding solid
683 .....And solid
684 .....Adding solid
685 .....Containing Halogen
686 .....Melting Aluminum(Al)
687 .....Scrap
688 ....Gallium(Ga) or Indium(In)
689 ....Germanium(Ge)
690 ....Tin(Sn)
691 .....Reduction
692 .....Of Halogen containing material
693 ....Lead(Pb)
694 .....Treating material in gaseous suspension or gaseous state
695 .....Reduction
696 .....Of Lead-Sulfur compound
697 .....Treating molten Lead(Pb)
698 .....By vacuum
699 .....Adding gas
700 .....Containing Halogen atom
701 .....Adding solid
702 .....Containing free metal
703 ....Antimony(Sb)
704 .....Reduction
705 ....Bismuth(Bi)
706 ....Arsenic(As)
707 ...Reducing or smelting unnamed ore
708 ...Stirring or agitating of molten material
709 ...Covering the surface of molten metal
710 ..Below 300 degrees C
711 ...Using nonmetallic material which is liquid under standard conditions (e.g., hydrometallurgy, etc.)
712 ....Involving mining or in situ operation
713 ....From photography material
714 ....From electrolytic or cementation slime
715 ....Removing coating to recover free metal from substrate or coating
716 .....From Tin(Sn) scrap or Tin plate
717 ....Reducing to free metal with gas
718 .....Copper (Cu) recovered as free metal
719 .....Using Sulfur dioxide
720 .....Noble metal recovered as free metal
721 ....Utilizing organic reducing agent
722 ....Involving organic compound containing metal or organic agent for agglomerating metal
723 .....Natural or synthetic polymer
724 ....Displacing by another metal (i.e., electromotive series)
725 .....Lead(Pb) or Zinc(Zn) recovered as free metal
726 .....Copper(Cu) recovered as free metal
727 .....And flotation
728 .....And injecting or pressurizing with air or Oxygen

729 ......From Cyanide solution
730 ......With agitating or abrading
731 ......Utilizing leaching agent containing Sulfur(S)
732 .....Noble metal recovered as free metal
733 ......Silver(Ag) recovered as free metal
734 ....And injecting or pressurizing with air or Oxygen
735 ....From Cyanide solution
736 ......Gold(Au) recovered as free metal
737 ....From Cyanide solution
738 .....Nickel(Ni) or Cobalt(Co) recovered as free metal
739 ....Utilizing chemical agent to precipitate free metal
740 .....Copper(Cu) recovered as free metal
741 .....Noble metal recovered as free metal
742 ....Cleaning, leaching, or dissolving of Mercury(Hg)
743 ....With leaching or dissolving
744 .....Noble metal recovered as free metal
745 ...Alkali metal, singly or in combination
746 .Consolidating metalliferous material (e.g., ore, tailings, flue dust, fluxes, etc.) by agglomerating, compacting, or heat treating; preparatory process therefor; or treating consolidated material therefrom
747 ..Noble metal containing metalliferous material
748 ..With vaporization of impurity as metal halide
749 ..With physical separation or classification of solids
750 ...By sifting
751 ..With heat treatment (e.g., calcinating, fusing, indurating, roasting, sintering, vaporizing, etc.)
752 ...Vaporizing metalliferous impurity
753 ...With leaching, dissolving, or washing
754 ...By suspension (e.g., fluid bed, cyclone, etc.)
755 ...On moving grate, moving pallet, or endless belt
756 ....Using multi-layers
757 ....With gas recycling or reusing
758 ....Sintering
759 .....Of consolidated starting material
760 ...In shaft furnace or multi-hearth furnace
761 ....Sintering
762 ...In rotary kiln
763 ....Sintering
764 ...Coking of binder or additive
765 ...Sintering or with agglomerating or compacting
766 ....With coal, coke, pitch, asphalt, or tar
767 ....With synthetic polymer, natural polymer, or carbohydrate
768 ....With Alkaline earth metal compound, clay, or hydrosetting agent
769 ....Sintering
770 ..Agglomerating or compacting
771 ...With coal, coke, pitch, asphalt, or tar
772 ...With synthetic polymer, natural polymer, or carbohydrate
773 ...With Alkaline earth metal compound, clay, or hydrosetting agent

CROSS-REFERENCE ART COLLECTIONS

950 **CONSOLIDATED METAL POWDER COMPOSITIONS OF >95% THEORETICAL DENSITY (E.G., WROUGHT, ETC.)**
951 .Oxide containing (e.g., dispersion strengthened, etc.)
952 **PRODUCING FIBERS, FILAMENTS, OR WHISKERS**
953 **PRODUCING SPHERES**
954 **PRODUCING FLAKES OR CRYSTALS**
955 **PRODUCING DENTAL PRODUCT**
956 **PRODUCING PARTICLES CONTAINING A DISPERSED PHASE**
957 **CONTINUOUS REFINING OF MOLTEN IRON(FE)**

958 **WITH CONCURRENT PRODUCTION OF IRON(FE) AND OTHER DESIRED NONMETALLIC PRODUCT (E.G., ENERGY, FERTILIZER, ETC.)**

959 **THERMIT-TYPE REACTION OF SOLID MATERIALS ONLY TO YIELD MOLTEN METAL**

960 **IN ZERO GRAVITY ENVIRONMENT**

961 **TREATING FLUE DUST TO OBTAIN METAL (OTHER THAN BY CONSOLIDATION)**

962 **TREATING OR USING MILL SCALE**

FOREIGN ART COLLECTIONS

FOR **CLASS-RELATED FOREIGN DOCUMENTS**